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## THE MEDICAL HERITAGE OF CILICIAN ARMENIA

*Stella Vardanyan*

### *Introduction*

Conditions in Cilician Armenia between the twelfth and fourteenth centuries were propitious for development of the natural sciences and medicine. The Cilician medical school under the leadership of the great Armenian physician and philosopher Mkhitar (Mekhitar) Heratsi (twelfth century) has left a rich medical heritage. Besides creating their own works, Cilician physicians paid attention to editing and interpreting the medical treatises of the preceding Ani school, especially the famous *Bzhshkaran* (Book of Medicine) which was written during the reign of King Gagik (990-1020) of the Bagratuni dynasty. This medical treatise, a contemporary of Ibn Sina's *Canon*, is the oldest such work in Armenian. It was edited in Cilician Armenia in the last quarter of the twelfth century by Hetum Lambronatsi, the brother of the renowned scholar Nerses Lambronatsi. The editor enriched the treatise with two additional works: the short version of the famous book, *Jermants mkhitarutiun* or *Consolation for Fevers* (1184), by Mkhitar Heratsi, and an anonymous medical book attributed later also to Mkhitar "the Great." The *Bzhshkaran* is preserved in two Cilician manuscripts: the paper manuscript of the twelfth century in the Library of the Armenian Patriarchate in Jerusalem (MS 370), and the parchment manuscript of the thirteenth century in the Mekhitarist Library in Venice (MS 1281). Other versions of this text from the seventeenth century are housed in the National Library of France (MS 245) and the Mashtots Matenadaran (MS 9837). Manuscript 416 of the Matenadaran also holds a fragment from the twelfth century on prognostics written in the Skevra scriptorium by the scribe Kostandin.

It also contains the full text of Mkhitar Heratsi's *Consolation for Fevers* and the short version of his book of diseases titled *Akhrapatin*.<sup>1</sup>

These treatises present the achievements of the medical schools of Ani and Cilicia in the fields of anatomy, pathology, clinical medicine, pharmacology, phytotherapy (herbal medicine), and dietotherapy. Among these works on medicine and biology are the "Analysis of the Nature of Man and His Ailments" by Grigorios (Mashtots Matenadaran, MS 415), and "Tsaghik" (Flower or Anthology) by Stepanos (1232). There are also medical treatises of Syrian physicians who worked in Cilicia. They lived in an Armenian environment and wrote their books in Middle Armenian. Such works as *On the Structure of Man* (*Haghags kazmuyan mardoy*) by Abusaid (twelfth century), the *Book of Nature* (*Girk i veray bnutyan*) by Ishokh (thirteenth century), *Book of Medicine on Horses and Other Beasts of Burden* (*Bzhshkaran dzioy ev arhasarak grastnoy*) (1296-98) by Faraj, and other medical treatises were popular in Medieval Armenia. There are many copies of these works in the Mashtots Matenadaran (for example, MSS 715, 1751, 10975), precious relics of the medical heritage of Cilician Armenia.

### *The Gagik-Hetumian Bzhshkaran*

After the fall of the Bagratuni kingdom of Ani in 1045, the Rubenian Cilician state served as one of the political and cultural centers in medieval Armenia, where Armenian intellectuals—poets, musicians, painters, scientists, and physicians—gradually gathered. The patriarchate at Hromkla and the capital of Sis created conditions conducive for the development of the natural sciences and medicine in the spirit of the traditions of Armenian Renaissance of Ani.<sup>2</sup> Such an intellectual atmosphere promoted the development of the secular sciences, including medicine. It was therefore not at all accidental that the medical heritage of

<sup>1</sup> Stella Vardanyan, *Hayastani bzhshkutyan patmutyun* [History of Medicine in Armenia] (Erevan: Knnaser, 2000), p. 199.

<sup>2</sup> Levon Oganesyan [Hovhannisan], *Istoriia meditsiny v Armenii* [History of Medicine in Armenia], 5 vols. (Erevan: Armenian Academy of Sciences, 1946-1947), vol. 2, p. 185.

Ani was studied and cultivated in Cilician Armenia.

Original studies on problems of pathology, therapy, and pharmacology in *bzhshkarans* first appeared in Ani during the peak of Bagratuni rule.<sup>3</sup> Unfortunately, the author's name of the famous *Bzhshkaran*, which was written during the reign of King Gagik, has not been preserved. The book was later edited in Cilician Armenia and titled *Gagik-Hetumian Bzhshkaran*. According to the leading historian of Armenian medicine, Vahram Torgomian, this oldest medical book was "the mother of Armenian *bzhshkarans*".<sup>4</sup>

Beginning in the second half of the nineteenth century, the *Bzhshkaran* attracted the attention of Armenologists, most of whom identified King Gagik with Gagik I (990-1020), the celebrated representative of the Bagratunis at Ani.<sup>5</sup> Based on a colophon of a later period, Catholicos-scholar Garegin Hovsepian believed that the author of this medical book was Gagik Karsetsi,<sup>6</sup> while Vahram Torgomian maintained that it was Grigor Magistros.<sup>7</sup> Compared with the grandiloquent *grabar* (Classical Armenian) of Magistros' "Papers," however, the simple middle Armenian language of *Bzhshkaran* negates Torgomian's supposition. It is more likely that the author was one of Magistros' contemporaries of the Ani medical school who called himself the pupil of Hellenic teachers, although an examination of his work shows that he was closely related to Armenian medicine and to Armenian customs and traditions.<sup>8</sup>

In the twelfth and thirteenth centuries, this medical treatise of

<sup>3</sup> Stella Vardanyan, *Histoire de la médecine en Arménie*, trans. Raymond H. Kévorkian (Paris: Union médicale arménienne de France, 1999), pp. 97-107.

<sup>4</sup> Vahram Torgomian [Torkomian], "Hay bzhshkakan dzeragirk S. Ghazaru vankin. 'Gagik-Hetumian Bzhshkaran'" [Armenian Medical Manuscripts of the St. Lazarus Monastery: 'Gagik-Hetumian Bzhshkaran'], *Bazmavep* 2 (1923): 40.

<sup>5</sup> Arsen Sukrian, "Patmutiun hay bzhshkutian" [History of Armenian Medicine], *Bazmavep*, 32 (1881): 33-34; Ghevond Hovnanian, *Hetazotutium nakhneats ram-koreni vray* [Study of Ancient Folk Language], 2 vols. (Vienna: Mekhitarist Press, 1897), vol. 1, pp. 55, 136; Torgomian, "Hay bzhshkakan dzeragirk," *Bazmavep* 1 (1923): 8.

<sup>6</sup> Garegin Hovsepian, *Hishatakarank* [Colophons], 2 vols. (Antelias: Catholicosate of Cilicia, 1951), p. 672.

<sup>7</sup> Torgomian, "Hay bzhshkakan dzeragirk," *Bazmavep* 3 (1923): 70.

<sup>8</sup> Stella Vardanyan, "'Gagik-Hetumian Bzhshkarane' ev nra khmbagrakan tar-beraknere" [The "Gagik-Hetumian Bzhshkaran" and Its Edited Variants], *Patmabanasirakan handes* 2 (1985): 146-47.

Ani was edited in Cilicia by members of the Oshinian-Hetumian dynasty and, with additional works by Cilician authors, became known as *Gagik-Hetumian Bzhshkaran*. Until 1985, only two copies of this text were known: the paper manuscript of the twelfth century in the Library of the Armenian Patriarchate in Jerusalem (MS 370) and the parchment manuscript of thirteenth century in the Mekhitarist Library of Venice (MS 1281). These manuscripts are considered to be variants of the same medical book. The editor of both versions was called Hetum, “the son of Oshin,” but there are differences in the title of this person. While in manuscript 370 this Hetum was titled only as “*sebastios*,” in manuscript 1281 he bore the title of “great *sebastios*, lord of Korykos.”

At first these differences escaped the attention of Armenologists, and Hetum was mistakenly identified with the son of Oshin Lambronatsi who followed his father in 1294 in the position of marshal or high constable.<sup>9</sup> Later, however, basing themselves on the differences in the title of this Hetum, Armenologists concluded that these were two different persons.<sup>10</sup> The Hetum *sebastios* mentioned in manuscript 370 was the elder brother of Nerses Lambronatsi.<sup>11</sup> He was the lord of Lambron until 1201, when he was deprived of his possession by King Levon (Leo) II because of his insubordination, and then took monastic vows. This Hetum *sebastios*, according to Ghevond Alishan, was the editor of the *Gagik-Hetumian Bzhshkaran*. He could not have completed this work later than 1201, as he was still called “*sebastios*,” nor could he have finished it earlier than 1184, the date when Mkhitar Heratsi completed his *Consolation for Fevers*, which was included in the *Gagik-Hetumian Bzhshkaran*.

Regarding the identity of the second Hetum, the “great *sebastios*, lord of Korykos,” it has been determined that he was

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<sup>9</sup> Mesrop Magistros [Parsadan Ter-Movsesian], “Mkhitar Heratsvoy ev Amirdovlat Sebastatsu erku nshanavor dzeragrere” [Two Noted Manuscripts of Mkhitar Heratsi and Amirdovlat Sebastatsi], *Ararat* 7-8 (1905): 590; Vahram Torgomian, “Hay Bzhshkakan dzeragirk Erusaghem vankin” [The Medical Manuscripts of the Jerusalem Monastery], *Handes amsorya* 3-4 (1924): 111.

<sup>10</sup> Hovsepian, *Hishatakarank*, vol. 1, p. 670.

<sup>11</sup> Ghevond Alishan, *Sisvan* (Venice: Mekhitarist Press, 1885), pp. 81-83.

the historian Hetum (thirteenth-fourteenth centuries), the close relative of King Hetum II.<sup>12</sup> He revised the manuscript (MS 370) in Skevra's scriptorium, where it had been edited in the preceding century by one of his ancestors, Hetum Lambronatsi. In 1294, the historian Hetum ordered the old scribe Vard Mrtishetsi to copy it on parchment. Following the bidding of his patron—or maybe by his own initiative—Mrtishetsi shortened the text of the paper manuscript in various places, creating the second version of *Gagik-Hetumian Bzhshkaran*.

### *Mkhitar Heratsi*

The first editor, Hetum sebastios, added two new sections to the original text: the short version of Mkhitar's *Consolation for Fevers* (thirty chapters) and the medical book on pathology and clinical medicine by an unknown Cilician physician. Vahram Torgomian suggests that the author of the third section was also Mkhitar Heratsi, whose *Pathology* and many other works were lost during the Middle Ages. Though attractive, this hypothesis nevertheless requires additional textual evidence. In 1923, Vahram Torgomian dreamed that “a maecenas will be born, who can give to the Guttenberg's immortal hands this valuable *bzhshkaran*.<sup>13</sup> But this hope has not been realized.

The encyclopedic *Gagik-Hetumian Bzhshkaran* has been considered a treasury of medical knowledge and proved influential in the development of medieval Armenian medicine. Mkhitar Heratsi included the fourth chapter on prognoses from *Gagik-Hetumian Bzhshkaran* in his book, *Consolation for Fevers*. Other Armenian *bzhshkapets* (masters of medicine) also quoted extensively from that medieval encyclopedia. Amirdovlat Amasiatsi (fifteenth century) often cited it and included chapters on pharmacology in his *Akhrapatin*.<sup>14</sup> Armenianist Ghevond Hovnanian has shown traces of its influence in the *Bzhshkaran* of Hov-

<sup>12</sup> Ibid., p. 337; Hrachia Acharyan [Ajarian], *Hayots andznanunneri bararan* [Dictionary of Armenian Proper Names], 5 vols. (Erevan: Erevan State University, 1942-1962), vol. 3 (1946), p. 73.

<sup>13</sup> Torgomian, “Hay bzhshkakan dzeragirk,” 2 (1923): 40, 43.

<sup>14</sup> Stella Vardanyan, “Amirdovlat Amasiatsu haykakan aghbyurnere” [Armenian Sources of Amirdovlat Amasiatsi], *Patma-banasirakan handes* 1-2 (1994): 213-17.

hannes Hekim (MS 310, Mekhitarist Library, Vienna).<sup>15</sup> Further investigation of this manuscript has demonstrated that the author has included thirty-nine chapters from *Gagik-Hetumian Bzhshkaran*. In addition, a fourteenth-century *Bzhshkaran of Four Physicians*, preserved at the Mashtots Matenedaran (MS 8382), contains twenty-five chapters from the *Gagik-Hetumian Bzhshkaran*.<sup>16</sup>

During the reign of Georgian king Vakhtang VI (1675-1737), this treatise was translated into Georgian.<sup>17</sup> The translator edited the Armenian text and rearranged its chapters and sections, possibly to hide the close connection of the Georgian version called “Ustsoro Karabadini” to the original Armenian text. In 1940, the Georgian manuscript (MS H26, Georgian Institute of Manuscripts) was published by Lado Kotetishvili and presented as an original Georgian text written by Kananeli in the eleventh century.<sup>18</sup> In the eighteenth century, an Armenian author translated this Georgian version back into Armenian (MS 412, Mashtots Matenadaran). It is curious that such a competent Armenologist as Ilya Abuladze used this circumstance as an argument for the primacy of the Georgian version and its independence from the Armenian text.<sup>19</sup> Besides these later editions of the *Gagik-Hetumian Bzhshkaran*, there were also other versions of an earlier period, such as a fragment of the twelfth century on prognoses (MS 416, Mashtots Matenadaran) written in Skevra’s scriptorium by the scribe Kostandin. It also contains the full text of Heratsi’s *Consolation for Fevers* and the short version of his *Akhrapatin*.<sup>20</sup>

The fate of the works of the leader of Cilician medical school was closely interwoven with that of *Gagik-Hetumian Bzhshkaran*. The scientific and medical activities of Mkhitar Heratsi were connected with Cilician Armenia. He was the founder of medieval

<sup>15</sup> Hovnanian, *Hetazotutiunk*, vol. 1, pp. 146-51.

<sup>16</sup> Vardanyan, “Gagik-Hetumian Bzhshkarane,” pp. 151, 155-60.

<sup>17</sup> Ibid., pp. 231-32.

<sup>18</sup> Konstantin Eristavi et al., *Meditina Gruzii* [Medicine in Georgia] (Tbilisi: Ganatleba, 1967), pp. 46, 57.

<sup>19</sup> Ilya Abuladze, *Tsigni* [Works], 4 vols. (Tbilisi: Metsniereba, 1985), vol. 4, pp. 64-72.

<sup>20</sup> Stella Vardanyan, “Nor tvalner mijnadaryan haykakan bzhshkakan kendroneri masin” [New Data about Medieval Armenian Medical Centers], *Banber Erevani hamalsarani* 3 (1994): 205.

Armenian medicine, playing a similar role in Armenian medicine as Hippocrates did for Greek, Galen for Roman, and Ibn Sina for Arab medicine.<sup>21</sup> Heratsi studied the experience of the past in classical as well as folk medicine, creating such works as have not lost their value. The necessary preparatory work was done by unknown Armenian physicians, the precursors of Heratsi who translated the scientific heritage of Greek, Roman, and Arab physicians and created several works of their own, mainly on pharmacology and therapy. Heratsi characterized the existing conditions in Armenian medicine in the preface of his *Consolation for Fevers* as follows:

I, Mkhitar Heratsi, insignificant among physicians, have been since childhood a follower of wisdom and the art of medicine and having studied the Arabic, the Persian, and the Greek science, saw by reading their books that they mastered the perfect art of medicine, according to the first sages-philosophers, that is, the prognostic, the essence of medicine; while among Armenians, I did not find the like, but only about treatment.<sup>22</sup>

Leaving his native town of Her (Khoy) in the first half of the twelfth century, the young Mkhitar traveled to Cilicia, where he received his medical training and the honorary title of *bzhshkapet*. According to historian of Armenian medicine Levon Hovhannisyan, young Mkhitar was educated in one of the Arab centers.<sup>23</sup> However, there is no evidence in medieval Armenian literature to substantiate this view.

Being a man of unusual energy and fond of experiment and research, Mkhitar Heratsi led the adventurous life of a *periodeuta* (traveling physician), frequently journeying to distant lands in search of medicinal herbs. He experimented on the pharmacological properties of drugs, often at a patient's bedside, the results of which he summarized in his works. He wrote on human

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<sup>21</sup> Oganesyan, *Istoriia meditsiny v Armenii*, vol. 2, pp. 77-83; Stella Vardanyan, *Bzhshkutyune hin ev mijnadaryan Hayastanum* [Medicine in the Ancient and Medieval Armenia] (Erevan: Sovetakan Grogh, 1982), p. 21.

<sup>22</sup> *Mkhitaray bzhshkapeti Heratsvoy jermants mkhitarutiun* [Consolation for Fevers by Master Doctor of Medicine Mkhitar Heratsi] (Venice: Mekhitarist Press, 1832), introduction.

<sup>23</sup> Oganesyan, *Istoriia meditsiny v Armenii*, vol. 2, p. 77.

anatomy, biology, pathology, and pharmacology, but unfortunately a large part of his works is lost. Only fragments can be found in collections in the manuscripts of later physicians. That Mkhitar Heratsi was a physician and researcher with broad interests may be seen from even the short surviving extracts titled, for example, "On the Structure and Origin of the Eye," "On Hernia," "On Precious Stones," and "Predictions of Storms and Earthquakes." His works on pharmacology and pathology were long thought to be lost, but later specialists in the history of Armenian medicine believed that they were also included in the *Gagik-Hetumian Bzhshkaran* along with the *Consolation for Fevers*.

As a result of his work in science and medicine, the Armenian bzhshkapet had attained great fame in medicine by the 1160s. He was a close friend of Catholicos Nerses Shnorhali who dedicated to him one of his philosophical poems titled "On the Heavens and Its Stars."<sup>24</sup> In the 1180s, Mkhitar Heratsi began work on *Consolation for Fevers*, for which, during a long period of research, he read the treatises of ancient physicians and Arab scientists and explored the marsh-ridden valleys of Cilician Armenia to study malaria and contagious diseases. It was not surprising, therefore, that his work was the center of attention of all those concerned with the welfare of the people.

Catholicos Grigor Tgha, himself a philosopher and poet, encouraged and aided the bzhshkapet in every way possible. In the preface to *Consolation for Fevers*, Heratsi explained:

I wanted to write this book briefly, within the best of my abilities, on only three kinds of fevers with prognostics and therapy. . . . I enjoyed the love and patronage of Grigor, Supreme Catholicos of Armenians, who was responsible for my writing this work. . . . That was why I agreed to write this book, for the sake of necessity and usefulness. . . . We wrote this book, calling it "Consolation for Fevers," so that it would console the physician with knowledge and the patient with good health.<sup>25</sup>

Convinced that his work would be helpful to professionals and laymen alike, Mkhitar Heratsi wrote it not in *grabar*, which was

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<sup>24</sup> Nerses Shnorhali, *Iaghags erknits ev zardots nora* [On the Heavens and Its Stars] (Erevan: Hayastan, 1968).

<sup>25</sup> *Mkhitaray bzhshkapeti Heratsvoy jermants mkhitarutiun*, introduction.

the scientific language of that time, but in middle Armenian, the vernacular of Cilician Armenia. His daring step was evidence of the democratic nature of his outlook which deeply influenced later developments in Armenian medicine. He devoted much effort to creating medical terminology in the Armenian language. Numerous terms which he created at that time continue to be used in modern medicine today.<sup>26</sup> The *Consolation for Fevers* reflects Heratsi's materialistic approach to the essence of fever-causing factors. His unique theory of "moldiness" explained the origins of tumors. Besides the physical etiological factors, well-known to classical and Arab authors (Hippocrates, Galen, Ibn Sina), he introduced the new concept of "mold" as a living factor. Levon Hovhannisyan wrote: "It is an irrefutable, objective fact that up to the pre-microbiological period, no physician ever used such a term to describe the essence of infection, one so close to the truth, as did Mkhitar Heratsi."<sup>27</sup> He classified fevers into "one-day," "moldy," and "wasting" (consumptive) fevers. In this case, however, he was guided by intuition when he separated "one-day" fevers, which do not fit within the limits of humoral pathology. To explain their pathogenesis, he referred to the pneumatic theory of ancient authors. Here, however, the main point is that the experienced physician did not overlook some "unusual" features in the course of the disease. This serves as a basis to suppose that in the "one-day" fever group he described a few kinds of allergies: physical, chemical, and neuropsychological.<sup>28</sup>

Mkhitar Heratsi included in the "moldy" fever group a number of contagious diseases widespread in the Middle Ages (for example, malaria, typhoid fever, plague, smallpox, and measles). He identified the moldy nature of fever, especially the extreme contagiousness of typhoid fever. In *Consolation for Fevers*, he wrote: "If the patient suffers much from high temperature and moves uncomfortably from side to side, if his belly swells and if at percussion a tympanitic sound is heard, one may be sure that he will die, especially if there are black dots on his body as large as sumac. People should stay away from him and not come

<sup>26</sup> Stella Vardanyan, "Hay bzhshkakan terminabutyune XII darum" [Armenian Medical Terminology in the 12th Century], *Banber Matenadarani* 10 (1971): 185-97.

<sup>27</sup> Oganesyan, *Istoriia meditsiny v Armenii*, vol. 2, p. 121.

<sup>28</sup> Vardanyan, *Bzhshkutyune hin ev mijnadaryan Hayastanum*, pp. 26-27.

in contact with him.”<sup>29</sup> It was later, in the sixteenth century, that in European science the famous Italian physician Girolamo Fracastoro developed these ideas in his work, *On Infection, Infectious Diseases, and their Treatment* (1546).

As for the wasting (consumptive) fevers which correspond to the different clinical forms of tuberculosis in Mkhitar Heratsi’s opinion, they are brought about by emotional disturbances, over-exhaustion, malnutrition, and unfavorable climatic conditions—factors which contemporary medicine considers of great significance in the pathogenesis of tuberculosis. In describing symptoms and the course of fevers, Heratsi is revealed as a skillful physician who mastered the different methods of examining the patient beginning with a detailed anamnesis (medical history) with the patient to the objective methods used in medicine even today as observation, palpation, percussion (striking or tapping the body), and auscultation (listening to internal body sounds). Heratsi placed great importance on determining the patient’s pulse and temperature, as well as an analysis of the mucus, urine, and other discharges. He approached the disease from a dialectic point of view, dividing its course into four stages. Applying the Hippocratic theory, he advised physicians to have an individual approach to each patient, taking into consideration the course of the disease and its stages and accordingly foretell its outcome.

Armed with such knowledge, Heratsi used the experimental approach, often contrary to the scholastic point of view, and developed a complex system of cure based on the use of medicaments, especially herbs, as well as dietetic and physical methods. Faithful to the ancient principles of medicine, he suggested conducting the treatment according to Hippocrates—that is, curing “opposites by opposites.” Mkhitar Heratsi considered phytotherapy the most important, based on Armenian folk medicine as well as on the experience of ancient and eastern medicine.

In treating contagious-allergic diseases, the most useful among the medicaments suggested by Heratsi were the herbs with anti-bacterial, anti-inflammatory, and anti-allergic properties.<sup>30</sup> Heratsi

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<sup>29</sup> *Mkhitaray bzhshkapeti Heratsvoy jermants mkhitarutiun*, pp. 69-70.

<sup>30</sup> Stella Vardanyan, “Mijnadaryan hay bzhshkapetneri hayatsknern alerjik hivan-dutyunneri u nrants buzhman veraberyal” [The Views of Medieval Armenian Master Doctors on Allergic Diseases and Their Treatment], *Bnagityan u tekhnikayi patmu-*

recommended special diets for patients suffering from fever, which included mainly greens, vegetables and fruit, fresh as well as dried, juices and sweets prepared from them. Patients were advised to use coriander, basil, celery, okra, purslane and such fruits as pomegranate, quince, grapes, oleaster, figs, jujube plums. Among physical methods of treatment, he prescribed water therapy (dousing, baths), cold sponging, and physical exercise, and he attached great importance to psychotherapeutic methods, as well as the use of music for treatment. Thus, during "one-day" fever which, in his words, comes about from "worries and bitter cares," he recommended the following: "Amuse [the patient] with games and jokes and in every way possible, make him happy. The patient should listen to the songs of *gusans* [minstrels] as much as he can, to the sounds of strings and delightful melodies."<sup>31</sup>

Study of *Consolation for Fevers* confirms the high level of Armenian medicine during the time of Heratsi and places him in the front ranks of medieval physicians. In 1908, Ernest Seidel, who translated this work into German, had the following to say about Mkhitar Heratsi: "For example, when we, without prejudice, compare Hildegard's 'Physics' which was written a few decades before, with that of the Armenian master, we are compelled to grant the first-place laurel definitely to Heratsi for having basically known nature, for his consistent and individual thinking and for being completely free of the yoke of scholasticism."<sup>32</sup>

### *Grigoris and Aharon*

Grigoris (thirteenth century) was also a physician of the Cilician school, whose "Analysis of the Nature of Man and His Ailments" (Mashtots Matenadaran, MS 415) gives a picture of the development of pathology and clinical medicine in Cilician Armenia. The detailed clinical data in Grigoris' book indicate that hospitals were developing in Cilician Armenia, where physicians could follow the course of the disease directly at the patient's bedside

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tyune Hayastanum 8 (1987): 220-41.

<sup>31</sup> *Mkhitaray bzhshkapieti Heratsvoy jermants mkhitarutiun*, p. 19.

<sup>32</sup> Ernst Seidel, *Mechithar's des Meisterarztes aus Her "Trost bei Fiebern," nach dem Venediger Drucke vom Jahre 1832 zum ersten Male aus dem Mittelarmenischen* (Leipzig: J.A. Barth, 1908), p. iv.

and not be satisfied with only information gathered from books. Thus, on evidence given by Armenian historians, hospitals, homes for lepers and other such institutions were set up in Cilicia during the rule of the Rubenians. In that respect, much was accomplished by Prince Levon II/King Levon I (1187-1219), his daughter Queen Zabel (1222-52), King Levon II (1270-89), and other representatives of the Rubenian and Hetumian dynasties.<sup>33</sup>

As for etiology, Grigoris was Heratsi's follower, applying the theory of "moldiness" not only to "mold fevers" but also to wasting (consumptive) fevers, extending to various diseases of the lungs, heart, liver, and stomach. With reference to tuberculosis, he wrote:

Those between 18-35 years of age become ill with tuberculosis because at that age man's nature is mild, and if the pus becomes moldy, it contaminates his lungs very quickly. . . . Wise physicians say that those who become infected with that disease are those who come in contact with the patient especially in summer time and if the room is rather small. Infection may also be inherited from the parents.<sup>34</sup>

Thus, in giving a picture of lung tuberculosis, he mentioned the "pulmonary nodules," "ulcers," and "calculi," which the modern pathologist interprets as "tuberculous infiltrates," "cavity," and "calcification." Grigoris developed another of Heratsi's theses on the need to study the anatomical structure of the sick organism, thus becoming in medieval Armenian medicine a pioneer in pathologic anatomy.

The medical activities of the Armenian physician Aharon of Edessa and his family in the twelfth to fourteenth centuries were closely connected with the Cilician school. In 1232, his son Stepanos completed a valuable medical book titled *Tsaghik* (Flower or Anthology). In the preface, he wrote: "I, Stepanos, the son of physician Aharon of Edessa, also called Urfa, God's humble servant, composed what has been considered helpful by

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<sup>33</sup> Oganesyan, *Istoriia meditsiny v Armenii*, vol. 2, pp. 178-86.

<sup>34</sup> Grigoris, *Knnutyun bnutyun mardoy ev norin tsavots* [Analysis of the Nature of Man and His Ailments], comp. Artsrun Ktsoyan (Erevan: Armenian Academy of Sciences, 1962), p. 114. In publishing this work, Ktsoyan added a valuable contribution to the study of the medical heritage of the Cilician school.

the study of many, and which I have studied from such physicians as my father, and the Great Mkhitar and Simon." Stepanos' work summarized the data on clinical medicine and pharmacology, but unfortunately it was destroyed, along with numerous other Armenian manuscripts, during the Armenian Genocide.

### *Abusaid*

The activities of the Syrian physicians Abusaid, Ishokh, Faraj in Cilician Armenia during the twelfth and thirteenth centuries are of great interest. The scientific ties between Armenian and Syrian physicians, about which there is evidence from the end of the tenth century in the medical books of Ani, were strengthened during the Cilician period.<sup>35</sup> They all lived in an Armenian environment, wrote in middle Armenian, and maintained close relations with prominent figures in Armenian culture, especially Catholicos Nerses Shnorhali (1166-73) and Nerses Lambronatsi (1153-98). Such works as *On the Structure of Man* (twelfth century) by Abusaid, *Book of Nature* (thirteenth century) by Ishokh, *Medical Book on Horses and Other Beasts of Burden* (1296-98) by Faraj, and other medical and biological treatises were popular in medieval Armenian literature. There are many copies of these works in the Mashtots Matenadaran (MSS 549, 715, 4268, 10975, among others), valuable relics of the treasury of Cilician Armenian medicine.

Information about Abusaid is scant in medieval literature. The exact dates of his birth and death are not known, but judging from his relations with Nerses Shnorhali and Nerses Lambronatsi, it may be concluded that he was born in the first quarter of the twelfth century and reached a ripe old age. According to these data Abusaid was also the contemporary of Mkhitar Heratsi. Further, he was generally recognized not only as a physician but also as one versed in many branches of natural philosophy. Nerses Shnorhali, the Armenian poet, musician, philosopher, and theologian, often turned to him in disputed matters. In one manuscript, the following note appears: "He [Nerses] also asked Abusaid for the origin of the name of his native town, Edessa,

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<sup>35</sup> Stella Vardanyan, "Ancient Armenian Translations of the Works of Syrian Physicians," *Revue des études arméniennes*, n.s., 16 (1982): 213-19.

on which he [Nerses] was to write his famous Lamentation [*Voghb*.]”<sup>36</sup> Relations between Abusaid and Nerses Lambronatsi were also close, as confirmed by the fact that “The Names of City Builders” by Nerses Lambronatsi was written at Abusaid’s suggestion. Moreover, a book on anatomy in the list of works by Nerses Lambronatsi is now lost, but Hovnanian and Torgomian<sup>37</sup> have concluded that it was Abusaid’s book, *On the Structure of the Human Body*, the first editor and translator of which was Lambronatsi.

Abusaid’s *On the Structure of the Human Body* maintained the traditions of ancient physicians such as Hippocrates, Galen, and later representatives of Hellenistic medicine such as Nemesius of Emesa and Gregory of Nyssa. Although it was written when Islamic medicine flourished, the book does not mention the names of Arab physicians, not even Ibn Sina. In the preface, the author states:

The elite Greek and Hellenistic philosophers and masters of medicine recognized the nature of man’s body perfectly, its structure and how it came about, how its internal organs developed, the bones and joints, what similarities there are in its nature and function, how all the organs of the body are fed, also the course of diseases and the influence of drugs were known to them. The great sages of medicine—Galen, Aristotle, and Hippocrates—wrote about all this.<sup>38</sup>

In the collection of Mashtots Matenadaran there are thirty-nine copies of *Anatomy* in three editions.<sup>39</sup> The first edition probably belonged to Nerses Lambronatsi (MSS 549, 1978, 2448, 8397). The editor of the second was Asar Sebastatsi, the Armenian physician of the sixteenth-seventeenth centuries (MSS 464, 715,

<sup>36</sup> Alishan, *Shnorhali ev paraga iur* [Shnorhali and His Environment] (Venice: Mekhitarist Press, 1873), p. 120.

<sup>37</sup> Hovnanian, *Hetazotutiun*, vol. 1, pp. 491-504; Vahram Torgomian, “Hay bzhshkakan dzeragirk: Apusayiti mardakazmuitiun” [Armenian Medical Manuscripts: Abusaid’s Human Anatomy], *Handes Amsorya* 11 (1892): 333-36.

<sup>38</sup> Abusayid, *Haghags kazmutyun mardoy* [On the Structure of Man], comp. Stella Vardanyan (Erevan: Armenian Academy of Sciences, 1974), pp. 116-17.

<sup>39</sup> Onik Eganyan et al., *Mayr tsutsak hayeren dzeragrats Mashtotsi anvan Matenadaran* [General Catalogue of the Armenian Manuscripts of the Mashtots Matenadaran] (Erevan: Armenian Academy of Sciences, 1965, 1970).

2268, 5622). The necessity of the second edition was explained in the following colophon of the manuscript copied in 1625 in Isfahan: "So, brothers, the original text was very short and marred by mistakes, but with God's help, the natural philosopher Asar Sebastatsi, who studied the best books and assiduously examined foreign sources, rewrote [the present work] with all the necessary precision." Asar Sebastatsi not only corrected a number of errors, which had in time slipped into Abusaid's book, but he also added the chapters on the structure of the eye from Mkhitar Heratsi's treatise on ophthalmology. As the later work of Mkhitar is now lost, this inclusion by Asar has helped the historian of Armenian medicine to retrieve bits of his heritage.

As to the short edition of Abusaid's *Anatomy* (MSS 1713, 1775, 1814, 3138, 4268), it was called "Extracts from the Book of the Wise Abusaid on the Structure of the Human Body." Here the author's name was also shortened. As the fragment "On the Eye" by Mkhitar in the short edition is missing, it must have preceded the edition by Asar. There is no information about the editor of the short version. He may have been an Armenian physician, probably a pupil of Mkhitar Heratsi. The popularity of *On the Structure of the Human Body* in medieval Armenia stimulated the creation of short version for students in medical schools.

Abusaid's works, based on the achievements of ancient medicine, summarized the knowledge on the structure of human body in medieval Armenian medicine. Indeed, in a number of cases, Abusaid quoted Hippocrates, Aristotle, and especially Galen. It would be a mistake, however, to consider the book of Abusaid only as a translation or reproduction of Galen's extensive *De anatomica*. The study of the three editions of Abusaid's book allows for an evaluation of its importance in the history of Armenian medicine. Levon Hovhannisyan, the author of the multi-volume *History of Medicine in Armenia*, wrote that Abusaid's treatise has extracted and reproduced "all that was known at the time in Armenia about the structure and function of the human organism."<sup>40</sup>

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<sup>40</sup> Oganesyan, *Istoriia meditsiny v Armenii*, vol. 2, p. 65.

### *Dissection and Vivisection*

Regarding the practice of dissection and vivisection, Galen wrote a treatise, *De anatomia mortuorum*, on the subject. The original of this important text has been lost so a great stir was created in the 1990s by Hungarian scholar Ishtvan Ormos the discovery of the Arabic translation of the text in two manuscripts in the Egyptian National Library.<sup>41</sup> It is probable that there were other translations of Galen's texts in various languages, including *grabar*, although among the works of the Armenian Hellenophile translators' school there is no such treatise. Its traces can still be seen in the works of authors in Ani and Cilicia. Indeed, in 1947 the Armenologist Levon Khachikyan found and published an interesting anatomical extract from the "Homilies" of Hovhannes Erznkatsi: "The experienced and wise physician who wishes to study [the human body] and the state of its joints, nerves, vessels, and internal organs, takes and kills the criminal sentenced to death, causing various agonies, and thus at the cost of one man's suffering he helps many people."<sup>42</sup>

Another anatomical excerpt of this kind was discovered by Gevorg Grigorian in the work of Vahram Rabuni, "Commentaries on Anatomy by Grigor of Nyssa."<sup>43</sup> Further, Armenologist Paylak Antabyan has found a relevant passage in the works of the noted thirteenth-century author Vanakan Vardapet in a question-and-answer format:

Question: How does [the physician] learn medicine?

Answer: By dissecting [the body] or by giving wine to the hungry [criminal] sentenced to death and then cutting his body and observing how [the wine] boils in the vessels and how [the blood] moves.<sup>44</sup>

<sup>41</sup> Ishtvan Ormos, "Bemerkungen zur editorischen Bearbeitung der Galenschrift über die Section toter Lebewesen," in *Galen und das Hellenistische Erbe*, ed. Jutta Kollesch and Diethard Nickel (Stuttgart: F. Steiner, 1993), pp. 165-72.

<sup>42</sup> Levon Khachikyan, "Diaherdzume hin Hayastanum" [Dissection of Corpses in Ancient Armenia], *Teghekgagir* 4 (1947): 83-90.

<sup>43</sup> Gevorg Grigoryan, "Diaherdzman goyutyune mijndarum havastogh mi nor past" [Reliable New Evidence on the Existence of Dissection in the Middle Ages], *Banber Matenadarani* 6 (1962): 293-96.

<sup>44</sup> Paylak Antabyan, "Mijnadaryan Hayastanum iragortsvogh diaherdzman vera-

Khachikyan and other scholars have interpreted this information as evidence of the existence of dissections and vivisections in the medical schools (*bzhshkanots*) of Cilician Armenia, and historians of Armenian medicine accepted this hypothesis without objection, although recent findings have revealed certain weaknesses in this hypothesis. First, it is known that after the Hellenistic period the practice of dissections and vivisections had virtually ceased in Christian Europe and in the Muslim East.<sup>45</sup> Even during the Renaissance the state and religious institutions opposed vivisections. No doubt such an attitude also existed in Cilician Armenia during the eleventh through fourteenth centuries. It is therefore more probable that these Armenian fragments reflected not the actual practice of the medical centers in Cilicia but rather the old Alexandrian tradition that had continued down through the centuries. Armenia and Cilicia were never specifically mentioned in these fragments. A comparison of the fragments with the Arabic translation of Galen shows a close relationship.

There is no doubt that the Armenian authors of the eleventh through thirteenth centuries cited Galen's treatise *De anatomica mortuorum*. Further study of medical, philosophical, and theological manuscripts of that period may reveal other Armenian versions or fragments of Galen's text, the study of which Levon Khachikyan began several decades ago.<sup>46</sup>

### *Ishokh*

Armenians were equally interested in the works of Ishokh (or Isa), another Syrian physician. Garegin Zarpanalian suggested that Ishokh and the Syrian writer Ebed Yeshu or Abdisho Bar-Brika (thirteenth-fourteenth centuries) were one and the same.<sup>47</sup> The

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beryal evs mek nor vkayutyun" [One More New Evidence on the Practice of Dissection in Medieval Armenia], *Sion* 3 (1977): 66-69.

<sup>45</sup> Nancy G. Siraisi, *Medieval and Early Renaissance Medicine* (Chicago: University of Chicago Press, 1990), pp. 78-114.

<sup>46</sup> Stella Vardanyan, "Mijnadaryan Hayastanum diaherdzman ev kendanahatman hartsi shurj" [On the Question of Dissection and Vivisection in Medieval Armenia], *Banber Erevani hamalsarani* 2 (1995): 155-57.

<sup>47</sup> Garegin Zarpanalian, *Haykakan hin dprutian patmutiun* [History of Ancient Armenian Literature] (Venice: Mekhitarist Press, 1897), p. 484.

hypothesis of the editor of the Armenian version of the *Chronicle* by Michael the Syrian appears to be more promising,<sup>48</sup> according to which, Ishokh, the physician and the author of the *Book of Nature*, was also the Syrian philosopher who in 1248 had translated the *Chronicle* into *grabar* in collaboration with the Armenian historian Vardan Areveltsi. Having sufficient knowledge of Classical Armenian, he reproduced his treatise with the help of Armenian colleagues.

The *Book of Nature* is a philosophical treatise that examines medicine, botany, chemistry, cosmology, astronomy, geography, meteorology, and mineralogy. The integrated perspective characteristic of antiquity is clearly noted. The author used a synthesized philosophical approach to the study of nature which was close to the deductive method of ancient scientific thought. But at the same time, he also gave special consideration to natural phenomena. All this is reflected in the title of his treatise: *Book of General and Particular Nature*. Although Ishokh's world outlook was limited by Christian dogma, it evidently displayed pantheistic features peculiar to antiquity and especially for Neoplatonic philosophy. He wrote: "We consider Nature the cause of universal Harmony, moving the celestial sphere."<sup>49</sup>

Such an approach to natural phenomena has defined the composition and structure of the *Book of Nature*. This treatise discusses primarily the following: 1) the geography and climate of the seven zones of the earth; 2) the composition of the seven heavenly bodies (Sun, Moon, Mercury, Venus, Mars, Jupiter, and Saturn) and their movements; 3) the origin of minerals and their classification; 4) propagation of plants, their classification and medicinal application; 5) a study of meteorological phenomena (rain, snow, wind, heat, cold); 6) a classification of ethnic types depending on climatic zones; and 7) a study of human nature (anatomy, physiology, embryology, and psychology).

In dealing with these issues, Ishokh employed the theories of ancient scholars. Although among these only the names of Aristotle and Hermes Trismegistus were mentioned, the ideas of

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<sup>48</sup> *Zhamanakagrutiun Tearn Mikayeli Asorvoy Patriarki* [Chronicle of Michael the Patriarch of the Syrians] (Jerusalem: St. James Press, 1871), pp. 6, 11-12.

<sup>49</sup> Ishokh, *Girk i veray bnutyani* [Book of Nature], comp. Stella Vardanyan (Erevan: Armenian Academy of Sciences, 1979), p. 82.

other Greek philosophers appear on many pages of his treatise. Topics such as anatomy, physiology, and embryology are considered in the spirit of Galen and his successors (Gregory of Nyssa, Abusaid). When considering questions of embryology, Ishokh dwelled on the processes of fecundation and growth and development of the fetus. He addressed the question of sterility which also interested Ibn Sina. Ishokh observed: "There are many causes of sterility. Some women are deprived of a uterus by nature; sterility arises after diseases and because of male and female frigidity."<sup>50</sup> The *Book of Nature* displays a keen interest in phytotherapy. It describes the medicinal properties of some trees and plants, such as turpentine, camphor, oak, olive, saffron and sweet violet, as well as vegetables and certain fruits, many still used in folk medicine.

Although the *Book of Nature* is not divided into chapters, three chapters were added at the end of the treatise: "On Animals," "On Tastes," and "On Colors." The first two, in some manuscripts, were attributed to Ishokh. The chapter "On Colors" is a fragment of an ancient Armenian translation of Plato's *Timaeus*.<sup>51</sup> As for the chapters "On Animals" and "On Tastes," the first supplemented the picture of the organic world in the *Book of Nature*, while the other discussed the physiology of taste and problems of diet. The *Book of Nature*, like Abusaid's *Anatomy*, was in great repute in medieval Armenian literature. There are twenty-six copies of Ishokh's treatise in the collection of the Mashtots Matenadaran (MSS 745, 1713, 1751, 4268, among others), and still others are found in the collections of Armenian manuscripts in Venice, Vienna, and Jerusalem.

Studies of the works of Syrian physicians by scholars of Armenian medicine beginning in the late nineteenth century (Torgomian, Hovnanian, Hovhannisyan) have now been supplemented by the publication of critical texts of Abusaid's treatise *On the Structure of the Human Body* and Ishokh's *Book of Nature*. Since the Syrian manuscripts of these works no longer exist, their Armenian translations have acquired the value of originals.

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<sup>50</sup> Ibid., p. 100.

<sup>51</sup> Stella Vardanyan, "13-rd dari bnagitakan mi erki masin" [On a Biological Treatise of the 13th Century], *Patma-banasirakan handes* 1 (1973): 38-48.

*Faraj*

Besides these treatises in medieval Cilician medical literature, there also existed the *Medical Book on Horses and Other Beasts of Burden* by Faraj the Syrian, with the assistance of an Armenian priest named Toros. Dedicated to problems of veterinary and especially of horse medicine, it was produced in the Cilician capital city of Sis at the end of the thirteenth century, nearly at the same time as the Armenian version of the famous *Geoponica*, which includes sixteen chapters on this subject. The interest in such matters in medieval Armenian science was not at all accidental. Urartian sources, Herodotus, Xenophon, as well as Armenian and Arab historians, attest to the fact that from the Urartian period down through the Artashesian, Arshakuni, and Bagratuni kingdoms, Armenian purebred horses were in great repute because of their spiritedness, beauty, and endurance. Modern studies indicate that the domestication of horses on the Armenian Plateau took place in the fourth millennium B.C.<sup>52</sup> These old traditions were further developed in Cilician Armenia, producing a rich literature on horse-breeding and horse-medicine, among them Faraj's *Medical Book on Horses and Other Beasts of Burden*. Examination of this work is closely linked with the name of Hrachia Acharyan. In 1906, he described the original manuscript owned by an Armenian tailor, Shirmazan, in Tabriz. Later, Khachik Sarajian purchased the manuscript and took it to Los Angeles. Babken Chukaszyan received a photocopy of the *Medical Book* from him and published the text with introduction, commentaries, and glossary.<sup>53</sup> In 1987, Sarajian donated this Cilician manuscript to the Mashtots Matenadaran (MS 10975).

There are also foreign translations of this work. The Arabic translation, according to the colophon of the text, was done in 1298-99 on orders of Mamluk Sultan Husan al-Din Lajin, after

<sup>52</sup> Sonya Mezhlumyan, "The Domesticated Horse in Ancient Armenia," International Council for Archeozoology, Proceedings of the Sixth International Conference, Washington, DC, 1990.

<sup>53</sup> Hrachia Acharyan, *Tsutsak hayeren dzeragrats Tabrizi* [Catalogue of Armenian Manuscripts of Tabriz] (Vienna: Mekhitarist Press, 1910), pp. 137-38; Babken Chukaszyan, comp., *Bzhshkaran dzioy evarhasarak grastnoy* [Bzhshkaran on Horses and Other Beasts of Burden] (Erevan: Armenian Academy of Sciences, 1980).

the Mamluks had captured Sis and plundered the royal treasury, which included manuscripts.<sup>54</sup> The text of the Arabic translation is to be found in the collection of the British library (MS Or 3133). In the eighteenth century, Faraj's study was translated into Georgian from an Armenian copy.<sup>55</sup> Analyses of his work have continued to the present. Hasmik Mkrtchyan, who has shed light on the question of the foreign sources of *Bzhshkaran dzioy*,<sup>56</sup> has demonstrated that besides the "Book on Horses and Veterinary" by the ninth-century Muhammad ibn Abi Yusuf Yakub ibn Akhi Hizam al-Khatbi, the works of the famous Indian physician and philosopher Chanakya (minister of the emperor Chanragupta, 321-298 B.C.) were important sources of Faraj's book. The portrait of Chanakya found at the beginning of the *Medical Book on Horses and Other Beasts of Burden* attests to the close cultural relations between Armenians, Syrians, and other neighboring peoples in the Cilician period.

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<sup>54</sup> Babken Chukasyan and Aram Ter-Ghevondyan, "‘Bzhshkaran dzioy’ norahayt araberent targmanutyun" [Newly-Discovered Arabic Translation of the "Medical Book on Horses"], *Lraber hasarakakan gitutyunneri* 11 (1985): 63-68.

<sup>55</sup> Paruyr Muradyan, *Armiano-gruzinskie literaturnye vzaimootnosheniia v XVIII v.* [Armenian-Georgian Literary Relations in the 18th Century] (Erevan: Armenian Academy of Sciences, 1966), pp. 207-10.

<sup>56</sup> Hasmik Mkrtchyan, "Faraj Asoru *bzhshkaran dzioy* ev arhasarak grastnoy erki arabakan aghbyurnere" [The Arabic Sources of Faraj the Syrian's *Medical Book on Horses and Other Beasts of Burden*], *Iran-Name* 2-3 (1997).

Երանցաւոց ու Եմանալու քննել անու ոչ  
 եղաւ ինձաւու քենաւ ։ Եղ Եղ կատարուա  
 ստեաւուց ։ Եմար մայու երանուին ու  
 բարացոց ։ Եպարաւուց ։ Եկեղեւուացուց ։  
 Ական յընիքերուուն որաւ ուսուց զուցու ։  
 Արանձեն պարուաւու բժիկու ։ Եկ Եկ Եկ  
 կատարուաւու ըստ առաջին ինձաւուուց ։  
 Այս ենուց զնանաւուաւուին ու ուստանաւու  
 երանուաւուուն ։ Եղ բժկանաւուաւուու  
 եց ։ Եկ Հայր ըստ ոչ զու զվարուա  
 ստեաւ ։ Եայ եմանաւուաւուաւու ։ Եկ Եկ Եկ  
 Եկ պատահուուն մայու ։ Եայ յաս յաս  
 կարուի Եկ ։ Եյ Համանաւու եմանցու  
 բար ։ ասած եմանցուաւուաւու ։ Եյ Եյ  
 Եյ յայ զուաց եմանց այլ այլած ։  
 Ամենայն ապացուաւուաւու կատարուաւու

Mkhitar Heratsi's *Consolation for Fevers*